

**A**lternative sources of fertilizers for coconut such as organic fertilizers are now being used by farmers in combination with chlorine nutrient sources as KCl (44% Cl) and NaCl or common salt (50% Cl) inorganic fertilizers. Several farm waste materials e.g. animal manures specifically goat manure and coconut farm by-products are usually produced right in the farmer's backyard. Aside from their nutritional value, they have high organic matter content, which improve soil physical and chemical conditions thus providing for better water retention and soil aeration.

## SOURCES OF ORGANIC FERTILIZERS

1. Goat Manure – waste material of goat (small ruminant)
2. Coconut Husk – basic residue of the mature nut
3. Coconut Coir Dust – secondary residue or by-product in the processing of husk to coir fiber
4. Coconut dry leaves, stipules, branches – residual vegetative parts of coconut

## FERTILIZER COLLECTION AND APPLICATION

### 1. Goat Manure

- a. Collect from the Bureau of Animal Industry (BAI) farms and/or farms with abundant supply of this waste material.
- b. Collected organic materials are spread out and air dried in raised platforms under shade so as to protect them from rain and direct sunlight. The seasoning of materials takes place for 2-3 months till decomposed.
- c. Manures are spread 5 inches thick, turned 3 times with intervals of 2 days after spreading.
- d. The air dried manures are applied to coconut with the following rates at different stages of growth in combination with Cl-fertilizer.

Year	FP	0.5	1	2	3	4	5-10	>10
Goat Manure (kg/tree)	1	2	3	4	6	8	10	12

### 2. Coconut Husk and Coir Dust

- Husk – spread uniformly around feeding root zone, within 1.5 radius, each husk separated in 4-5 pieces
- Coir Dust – either broadcast and fork-in within the top-soil (4-6 inches) or by hole method (in 8-10 holes, distribute the coir dust)
- General recommendation for coastal and inland coconut areas under post-rehabilitation period (at least in 2-3 years):

Material	Area	Amount/Tree	Frequency & Timing
Husk	Coastal	50 pcs	Anytime of the year, every six mos., best at start and end of rainy season (in dry and intermediate growing zones)
	Inland	75 pcs	
Coir Dust	Coastal	10 kg	-same-
	Inland	15 kg	

- ### 3. Coconut dry leaves, stipules, branches and other parts
- collect from the field and place or mulch at the base of coconut trees (about 1.5 m radius) together with other organic and inorganic fertilizers.

Material	% N	% P	% K	% Cl
Goat Manure	1.68	2.50	1.33	-
Coco Husk	0.30	0.02	1.80	0.95
Coir Dust	.25-.50*	44-60*	680-1080*	600-800*

- no available data \* in ppm

Property/ Material	Time from Application		
	2 mos.	5 mos.	10 mos.
% OM/Husk	76.5	83.1	52.3
% OM/Coir Dust	59.3	74.1	51.0
% MC/Husk	7.2	9.1	14.1
% MC/Coir Dust	22.7	13.1	14.5

OM – Organic Matter MC – Moisture Content

Treatment	Average Copra (kg/tree)	Gross Income*	Total Cost*	Net Income*	Benefit-Cost Ratio
No Fert.	8.3	9,460	2,328	7,132	3.06
By-P+NaCl	25.5	27,159	3,999	23,159	5.79
Inorg. Fert.	28.5	32,604	7,770	24,833	3.20
Goat man.	16.5	18,887	5,492	13,394	2.44

\* in PHP/ha/year

## ECONOMIC RETURNS

The use of organic fertilizers such as goat manure and coconut farm by-products entailed lower cost of production and in return higher net income compared to no fertilizer. An average net income of P23,159 and P13,394 for coconut by-products plus NaCl and goat manure, respectively was realized. Coconut by-products plus NaCl produced even higher net benefit than the  $(\text{NH}_4)_2\text{SO}_4$  + KCl inorganic fertilizer (Table 3).

## ADVANTAGES OF USING ORGANIC FERTILIZERS

1. Cutting the cost of farm inputs i.e. fertilizer
2. Farm residues and waste product utilization
3. Balance nutrient source
4. Improvement of soil properties
5. Consumer's demand for organically-grown food

## DEFICIENCIES/DISADVANTAGES OF USING ORGANIC FERTILIZERS

1. Presence of toxic substances
2. Variable fertilizer quality
3. Slow release of mineralized-nutrients
4. Bulky and difficult to transport
5. Should be combined with Cl-containing fertilizer to be more effective
6. Goat manure may not always readily and sufficiently available

## FOR ADDITIONAL INFORMATION:

### REFER TO:

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- Secretaria, M.I. and J.N. Maravilla. 1997 Response of hybrid coconut palm to application of manures and fertilizers from field planting to fully bearing stage. Plantations Journal (CIRAD). 4(2):126-138.
- Secretaria, M.I., R.M. Ebuña and R.Z. Margate. 1993. Utilization of farm by-products as media for polybagged coconut seedlings. Annual Report, Philippine Coconut Authority, Diliman, Quezon City. pp. 44-50.

### CALL, WRITE OR VISIT:

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# Goat Manure and Coconut Farm By-Products



## Recommended Organic Fertilizers for Coconut

Department of Agriculture  
Philippine Coconut Authority

Research, Development &  
Extension Branch  
Davao Research Center

